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Nota Científica / Short Communication

New goats on the island?

Novas cabras na ilha?

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Abstract

Trindade is an oceanic island located ca. 1200 km east of the Brazilian coast with only 65% of its original vegetation cover remaining. Devastation was mainly caused by the presence of goats for a long time. Since goats were eliminated in 2005 the island vegetation is going through a recovering process. However during a visit to the island in 2012 another threat to the vegetation was noted: a Leguminosae species is spreading and killing part of the endemic herbaceous vegetation of *Cyperus atlanticus*.

Key words: Ilha da Trindade, vegetation, *Guilandina bonduc*, *Cyperus atlanticus*.

Resumo

Trindade, uma ilha oceânica localizada a cerca de 1200 km da costa do Brasil, possui apenas 65% da sua cobertura vegetal original. A principal causa da devastação foi a presença de cabras por um longo período de tempo na ilha. Em 2005 as cabras foram eliminadas e a vegetação voltou a se recuperar, mas uma visita à ilha em 2012 revelou um novo perigo a vegetação: a presença de uma espécie de Leguminosae que está se espalhando e matando a parte da vegetação herbácea endêmica de *Cyperus atlanticus*.

Palavras chave: Ilha da Trindade, vegetação, *Guilandina bonduc*, *Cyperus atlanticus*.

Trindade is a small oceanic island of volcanic origin located at ca. 1200 km east of the Brazilian coast at 20°31'30"S and 29°19'30"W. Its vegetation has been investigated since the early 1900's (Alves 1998). Currently, however, it has only about 65% of its surface covered by vegetation, being only 5% of forests (Alves 1998; Silva & Alves 2011). The main cause of the devastation observed in Trindade is due to a long-term presence of goats, which were introduced in the island by Edmund Halley in 1700 (Alves 1998; Silva & Alves 2011).

Goats are well known for overgrazing and consequently for causing plant extinction on oceanic islands (Campbell & Donlan 2005). Knowing this, the Brazilian Navy (responsible for the Island) worked on the complete eradication of the introduced goats in the last decade. The goat extermination has allowed the vegetation to slowly recover towards what is believed to be its original form (Silva & Alves 2011). However, a recent expedition to Trindade (June 2012) revealed another problem affecting the vegetation, maybe of same magnitude as the one caused by the goats. It

was noted that the species *Guilandina bonduc* L. (Leguminosae, Caesalpinoideae) is killing the herbaceous vegetation, in particular the endemic *Cyperus atlanticus* Hemsl. (Cyperaceae).

Guilandina bonduc is a pantropical species, with drift seeds able to disperse and survive across the ocean (Lewis *et al.* 2005). According to Alves (1998), the presence of *G. bonduc* in the island was previously reported by Lobo in 1916 (as *Caesalpinia bonducella* (L.) Fleming) and by Becker in 1965.

Due to the grazing behavior of goats, the population of *G. bonduc* was maintained under control (Alves 1998). After goats' elimination, however, *G. bonduc* is spreading across the island. This species seems to have strong allelopathic effect, forming halos that are visible from miles of distance (Fig.1).

Alves *et al.* (2011), already reported similar phenomenon of halos caused by the killing of the native species, but it was attributed to the presence of exotic species mistakenly introduced (mostly *Syzygium cumini* (L.) Skeels, Myrtaceae). We have

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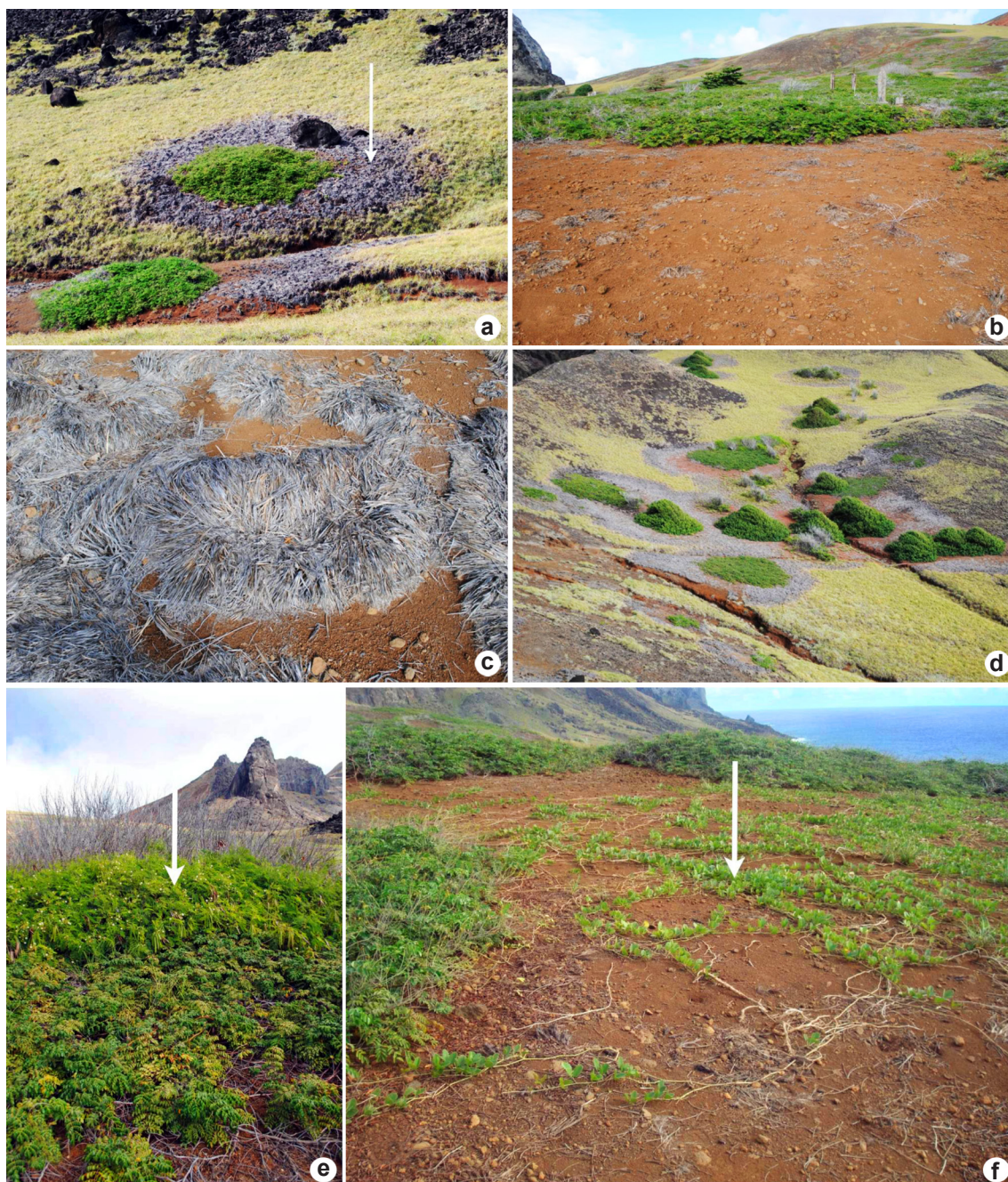


Figura 1 – Pictures taken from halo affected area – a. halos (arrow) formed by dead *Cyperus atlanticus*, in the middle it can be seen *Guilandina bonduc*. b. halo of barren soil left after the death of *Cyperus atlanticus*. c. dead and dry *Cyperus atlanticus*. d. halos seen from above. e. *Leucaena leucocephala* growing, unaffected, among *Guilandina bonduc*. f. *Dioclea* sp. growing unaffected, among *Guilandina bonduc*.

not seen any traces of halos around any of the exotic species present but only around *G. bonduc*.

Moreover, as a result of such species spread, individuals of *Cyperus atlanticus* dries, dies (Fig. 1c), and eventually only barren soil is left

(Fig.1b). It seems that *G. bonduc* is still absent on higher altitudes, such as Morro do Desejado and adjacent areas, but quite common in the low areas. The allelopathic effect of *G. bonduc* on the vegetation seems to be selective not affecting island

representatives of *Leucaena* sp. and *Dioclea* sp. (Fig. 1e-f) but fatal to the more sensitive endemic *C. atlanticus*. Voucher of all plants involved were collected and are deposited at herbarium UB (Carvalho-Silva *et al.* 1780, 1794).

The purpose of this paper is to report this phenomenon. At this moment studies are being carried out at the Universidade de Brasília (UnB) to determine the precise mechanism of action and which chemicals are involved. The initial results highlight that *Guilandina bonduc* must be removed soon enough. Otherwise, such plant species may cause damages similar to that caused by the goats.

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References

- Alves, R.J.V. 1998. Ilha da Trindade e Arquipélago Martin Vaz - Um ensaio geobotânico. Serviço de Documentação, Marinha do Brasil, Diretoria de Hidrografia e Navegação, Niterói. 144p.
- Alves, R.J.V.; Silva, N.G. & Aguirre-Muñoz A. 2011. Return of endemic plant populations on Trindade Island, Brazil, with comments on the fauna. *In*: Veitch, C. R.; Clout, M.N. & Towns, D.R. (eds.). Island invasives: eradication and management. Proceedings of the International Conference on Island Invasives. Gland, IUCN, Auckland. Pp. 259-263.
- Campbell, C. & Donlan, C.J. 2005. Feral goat eradications on islands. *Conservation Biology* 19: 1362-1374.
- Lewis, G.P.; Schrire, B.; Mackinder, B. & Lock, M. 2005. Legumes of the world. Royal Botanic Gardens, Kew. 578p.
- Silva, N.G. & Alves, R.J.V. 2011. The eradication of feral goats and its impact on plant biodiversity - a milestone in the history of Trindade Island, Brazil. *Rodriguésia* 62: 717-719.